UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

53-79

FIGURE 1.

RANGE AND CORRELATION OF DETAILED STRATIGRAPHIC SECTIONS

Solid line represents strata present in each section.
Dashed line represents uncertain correlations or covered intervals.
Dotted line represents the range of unconformities.
Location of sections shown on index map, figure 2.

AGE			EUROPEAN STAGES	STRATIGRAPHIC UNITS IN THE HELCHINA AREA (THE SOUTHEASTERN TALKEETNA MOUNTAINS AND SOUTHWESTERN COPPER RIVER BASIN)	CHARACTER	LOCATION OF BEST EXPOSURES FOUND TO DATE	THICKNESS MEASURED OR ESTIMATED FEET
CENOZOIC	QUATERNARY	RECENT	- - -	Recent deposits.	Alluvium, terrace gravels, landslide debris and moraine deposits.	In or near present stream channels, alluvial fans, landslides, and margins of active glaciers.	- - -
		PLEISTOCENE	- - -	Pleistocene deposits.	Glacial lake clays and silts, deltaic and outwash sands and gravels, till.	Thick deposits underlie the Copper River Basin and the larger tributary valleys to elevations of 3000 to 3750 feet. Only small patches and erratic stones occur beyond the limits of the thick glacial deposits.	0 to over 500
	TERTIARY			SLIGHT TILTING AND FAULTING, FLUVIAL AND GLACIAL EROSION.			
		UPPER TERTIARY		Late Tertiary basaltic lavas and tuffs.	Dark yellowish-or reddish-brown basaltic flows with some interbedded pyroclastics. Locally the basal beds are composed of tuffs and volcanic sediments.	Central Talkeetna Mountains. Headwaters of Caribou Creek and Oshetna River.	Maximum thickness over 2500 feet.
				FAULTING AND MILD FOLDING. UPLIFT AND EROSION, REMOVAL OF MUCH OF, AND LOCALLY ALL OF, THE TERTIARY SEDIMENTS.			
		EOCENE ? - ? -		Early Tertiary continental sediments.	Pebble and cobble conglomerate and yellowish-brown coarse sandstone and siltstone with coal fragments.	Lower Billy Creek. Head of Oshetna River.	Min. 2000
MESOZOIC	CRETACEOUS	UPPER	DANIAN	MAJOR OROGENY, FAULTING AND FOLDING. UPLIFT AND GREAT EROSION.			
			MAESTRICHTIAN ? - ? - ? - ? -	MATANUSKA FORMATION — Upper shale and siltstone member.	Dark gray shale and silty shale with thin fine-grained arkosic sandstone layers.	Above elevations of 4500 to 5000 feet on a mountain which is five miles north of Sheep Mountain and lies between Squaw and Alfred Crks.	Min. 1000.
			Probably Campanian but possibly Maestrichtian.	Upper sandstone and siltstone member.	Olive-gray arkosic sandstone with thick pebble conglomerate, siltstone and, locally, shale beds. Local large scale penecontemporaneous slump. Plant fragments and limestone concretions occur locally.	Between elevations of 4000 and 5000 feet on a mountain which is five miles north of Sheep Mtn. and lies between Squaw and Alfred Creeks.	1500
			? - ? - ? - ? - ? - CAMPANIAN	Lower shale and siltstone member.	Medium- and dark-gray shale and silty shale with numerous limestone concretions and a few thin sandstone and siltstone layers. Penecontemporaneous slumps, clastic dikes, thin laterally persistent ash layers and fossil wood fragments occur locally. Marine invertebrate fossils occur sparsely. The large shells of Inoceramus undulatoplicatus are common in, and characterize, the lower third of the member.	The larger tributaries of middle Squaw Creek.	6000-7000
			SANTONIAN				
			CONIACIAN	Basal sandstone member.	Thickbedded greenish-gray and locally olive-black fine-grained arkosic sandstone. Marine invertebrate fossils occur in places. Thick shale and siltstone beds occur within the unit in places.	Between 3300 and 4000 feet of elevation on the larger tributaries of Squaw Creek draining the north flanks of Gunsight Mtn. at the northeast end of Sheep Mtn.	About 250. Ranges from less than 50 to more than 650 feet.
			TURONIAN				
			CENOMANIAN	MAJOR FAULTING, SOME FOLDING, UPLIFT AND DEEP EROSION.			
		LOWER	ALBIAN				
			APTIAN				
			BARREMIAN				
			HAUTERIVIAN - ? - ? - ?	Sandstone and shale overlying the Nelchina limestone.	Thin- and thickbedded, cross-bedded, olive-gray, fine-grained, quartzose sandstone, often calcareous; and dark-gray shale which locally bears reworked fossiliferous limestone concretions of Upper Jurassic age.	Limestone Hills north of Limestone Gap. Also 1.2 miles north of the little Nelchina River on a tributary which enters one mile west of mouth of Flat Creek.	Min. 175. Probably thinned by erosion.
			VALANGINIAN	Nelchina limestone	Massive, very light gray, wave-rippled, fine-grained sandy limestone formed from finely comminuted molluscan shells. Emits a fetid odor when struck.	Limestone Gap and Limestone Hills. Also two to three miles northwest of mouth of Flat Creek	30 feet near Flat Creek. Over 175 feet near Limestone Gap.
				Sandstone and conglomerate underlying the Nelchina Limestone.	Massive, fine- and medium-grained, feldspathic and quartzose sandstone with numerous shelly beds and coarse channel-type conglomerate.	Limestone Gap.	0 to over 400 feet.
			BERRIASIAN	GENTLE FOLDING, MODERATE UPLIFT AND EROSION.			
		UPPER	PORTLANDIAN	NAKNEK FORMATION — Upper siltstone member.	Massive gray and dark olive-gray siltstone and shale with locally abundant limestone concretions. Moderately fossiliferous.	North of Little Nelchina River on small tributary entering one mile above Flat Creek.	Min. 1100
			KIMMERIDGIAN	Middle sandstone member.	Medium-bedded to massive, dark yellowish-brown, fine-grained quartzose sandstone, locally coquinoid. Thick siltstone beds occur in places. Aucella very abundant.	Flat Creek, 0.9 mile from mouth. Also 2.0 miles east of Limestone Gap on a tributary to Flat Creek.	250 or more feet thick.
			OXFORDIAN	Lower siltstone member.	Thickbedded, dark gray and dark greenish-gray siltstone with many limestone concretions and a few thin arkosic sandstone beds. Fossils locally common. Coarse conglomerates in extremely lenticular units occur within and at the base of the member, and locally exceed 450 feet in thickness.	Little Nelchina River and its tributaries from the south draining the Limestone Hills, especially a small stream entering 0.5 mile east of the main headwater forks.	Min. 1000, and possibly 2000 feet.
			CALLOVIAN	MODERATE FOLDING, STRONG UPLIFT AND EROSION.			
				Chinitna formation	Greenish-gray or olive-gray siltstone and shale with many limestone concretions and a few thin beds of fine-grained sandstone.	Caribou Creek near mouth of Billy Creek. Also the south- and west tributaries of the Little Nelchina River 0.3 to 1.0 mile S60W of its main headwater forks.	1200 to 1500 feet thick, but possibly as much as 2700 feet thick.
		MIDDLE JURASSIC	BATHONIAN	UPLIFT AND EROSION, PROBABLY ACCOMPANIED BY FOLDING.			
				Sandstone equivalent to the highest part of the Tuxedni formation.	Thickbedded, dark olive-gray, fine-grained sandstone with shelly layers and fossiliferous calcareous sandstone concretions. Also massive, gray-ish-green, very fine-grained sandstone with some shelly layers.	Northwest branch of Little Nelchina River 1.2 to 2.4 miles west of the main headwater forks.	Min. 1200
				UPPER PART OF INTERVAL REPRESENTED IN SUBSURFACE OR HEADWATERS OF LITTLE NELCHINA RIVER. ENTIRE INTERVAL INCLUDED IN AN UNCONFORMITY ON CARIBOU CREEK AND NORTH TRIBUTARIES OF ALFRED CREEK, MAY BE IN LARGE PART EQUIVALENT WITH		
			BAJOCIAN	Shale, siltstone, and sandstone.	Olive-gray siltstone and interbedded shale, siltstone, and arkosic sandstone. Gradational with underlying sandstone, possibly the base of an overlying unit.	Caribou Creek 0.7 mile east of Billy Creek. Ridge three miles north of mouth of Alfred Creek.	Over 65 feet thick.
				Sandstone equivalent to the lower part of the Tuxedni formation.	Thickbedded, olive-gray, fine-grained arkosic sandstone with limestone concretions and wood fragments. Locally fossiliferous. In places silty towards top.	Ridge three miles north of mouth of Alfred Creek. Upper part of unit well exposed 1.4 miles north of mouth of Albert Creek.	1100
		LOWER JURASSIC	TOARCIAN ? ? ? ?	MILD FOLDING AND LIMITED EROSION LOCALLY.			
				Talkeetna formation	Pyroclastics, flows, and tuffaceous sediments, predominantly of marine but in part of fresh-water origin. Volcanic debris becomes less important and marine fossils occur in the upper part of the formation.	Sheep Mountain, Albert Creek, North Creek and the northtributaries of Alfred Creek.	Several thousand feet thick.
			PLIENSBACHIAN	NATURE OF CONTACT NOT OBSERVED. POSSIBLY CONFORMABLE FROM REGIONAL CONSIDERATIONS.			
			SINEMURIAN	Marine siltstone, claystone, and mudstone.	Thin- to thick-bedded, olive-black, fossiliferous siltstone, claystone, and sandy mudstone. Wood fragments and shelly beds occur.	1.3 miles from Squaw Creek on a southern tributary which enters 5.5 miles east of Caribou Creek.	At least several hundred, and possibly a few thousand feet thick.
			HETTANGIAN	NATURE OF BASAL CONTACT AND OF THE UNDERLYING ROCKS NOT KNOWN. ELSEWHERE IN SOUTH-CENTRAL ALASKA THE JURASSIC ROCKS ARE UNDERLAIN BY TRIASSIC LIMESTONE, CHERT, GREENSTONE, SHALE, AND SLATE OR ARGILLITE. IN THE NORTHERN CHUGACH MOUNTAINS OCCUR: BANDED ARGILLITES AND QUARTZITES, CONGLOMERATES AND SILICEOUS SEDIMENTS THOUGHT TO BE PROBABLY OF CARBONIFEROUS AGE.			

SECTION 1
Upper half of section on a north tributary of Squaw Cr. entering 2.0 miles east of Caribou Cr. Lower half of section on a south tributary of Squaw Cr. entering 1.95 miles east of Caribou Cr.

SECTION 2
One mile south of Alfred Creek on a tributary entering six miles east of Caribou Cr.

SECTION 3
One mile south of Squaw Creek on a tributary entering 5.5 miles east of Caribou Creek

SECTION 4
Limestone Gap

SECTION 5
North tributary of the Little Nelchina River entering one mile west of Flat Creek.

SECTION 6
South tributary of the Little Nelchina River entering 0.5 mile east of the main headwaters fork.

SECTION 7
On a north tributary of Caribou Creek entering 0.3 mile east of Billy Creek.

SECTION 8
On ridge crest 3.0 miles north of mouth of Alfred Creek.

Stratigraphy and correlation by Arthur Grantz
1952

GENERAL STRATIGRAPHIC DESCRIPTIONS AND TENTATIVE CORRELATION OF DETAILED STRATIGRAPHIC SECTIONS OF ROCKS EXPOSED IN THE NELCHINA AREA, ALASKA

This report is preliminary and has not been edited or reviewed for conformity with the U. S. Geological Survey standards and nomenclature.